IN THE SPECIFICATION

1. Please amend the first paragraph on page 4, lines 3 and 4, as follows:

It is a further object of the present invention to provide a bit-rate independent optical receiver and a method thereof, which can increase transmission quality and [[a]] transmission distance.

2. Please amend the two consecutive paragraphs bridging pages 4 and 5, from line 14 on page 4 thru line 17 on page 5, as follows. The amendment made by the previous Amendment filed on 8 January 2004 has been incorporated herein:

To achieve these and other objects in accordance with the principles of the present invention, as embodied and broadly described, the present invention provides a bit-rate independent optical receiver comprising: an optoelectric converter for converting an input optical signal to an electrical signal; a bit rate identifying unit having [[a]] an identification signal generator for delaying the input signal, comparing the delayed signal with the original input signal period by period, and generating a sensing signal, and a bit rate deriving unit for low-pass-filtering the sensing signal and determining the bit rate from the resulting voltage level; a reference clock generator having a plurality of oscillators for generating clock signals of different frequencies, for selectively operating the oscillators to generate the reference clock signal the same as the bit rate detected by the bit rate identifying unit; and a clock and data recovery circuit for recovering a clock signal and data from the input signal according to the reference clock signal.

To achieve these and other objects in accordance with the principles of the present invention, as embodied and broadly described, the present invention provides an apparatus, comprising: a converter converting an input optical signal to an original

electrical signal; an identification unit receiving said original electrical signal, generating a first signal corresponding to said original electrical signal delayed by a ~~predetermined~~ predetermined quantity of time, generating a second signal corresponding to said original electrical signal not delayed, comparing said first and second signals, forming a third signal in dependence upon said comparing of said first and second signals, and detecting a bit rate in dependence upon said third signal; a clock generator generating a reference clock signal in dependence upon said detected bit rate; and a recovery unit recovering an input clock signal and data from said input optical signal in dependence upon said reference clock signal.

3. Please amend the paragraph on page 6, from lines 9-18, as follows:

To achieve these and other objects in accordance with the principles of the present invention, as embodied and broadly described, the present invention provides an apparatus, comprising: a converter converting an input optical signal to an original electrical signal; an identification unit receiving said original electrical signal, generating a first signal corresponding to said original electrical signal delayed by a pretermined quantity of time, generating a second signal corresponding to said original electrical signal not delayed, forming a third signal by performing an exclusive-OR logic operation upon said first and second signals, and detecting a bit rate in dependence upon said third signal; a clock generator generating a reference clock signal in dependence upon said detected bit rate; and a recovery unit recovering an input clock signal and data from said input optical signal in dependence upon said reference clock signal.

4. Please amend paragraph bridging pages 9 and 10, from line 16 on page 9 thru line 4 on page 10, as follows:

In this context, a so-called protocol free system has been developed to

accommodate optical signals at different bit rates. Therefore, optical signals are recovered just by waveform shaping, that is, reshaping and regeneration, without recovering a clock signal. The resulting noise and timing jitters, which increases ~~increased~~ as an optical signal passes through nodes, decreases transmission quality. In particular, a receiver or transponder confined to the reshaping and regeneration function is limited in transmission distance due to the decreased transmission quality when various protocols/bit rates are used in an optical network.

5. Please amend the paragraph bridging pages 11 and 12, from line 11 on page 11 thru line 3 on page 12, as follows:

An optical signal is applied at a certain bit rate in a certain protocol to the input of the optoelectric converter 10. The input optical signal is converted to an electrical signal by the optoelectric converter 10 and its bit rate is identified by the bit rate identifying unit 50. The reference clock generator 60 includes a plurality of oscillators for generating clock signals with different frequencies, which is different [[than]] from the clock generator 40 shown in Fig. 1. The clock generator 40 in Fig. 1 only generates a single type of clock signal, in accordance with the single bit rate of the input optical signal, as shown in Fig. 1. However, the reference clock generator 60 selectively operates the internal oscillators to generate a reference clock signal at a detected bit rate. The clock and data recovery circuit 70 is a programmable circuit, which is different [[than]] from the clock and data recovery circuit 30 shown in Fig. 1, for reshaping, regeneration, and retiming of an input signal according to the reference clock signal received from the reference clock generator 60.

6. Please amend the paragraph bridging pages 14 and 15 from line 15 on page 14 thru line 3 on page 15, as follows:

To overcome this limitation, the bit rate deriving unit 40b low-pass-filters the sensing signal and detects the bit rate from the resulting voltage level. Returning to FIG. 3, the bit rate deriving unit 40b includes a filter 44 for low-pass filtering a sensing signal received from the operator 43 of the identification signal generator 40a, an analog-to-digital converter (ADC) 45 for converting an analog signal received from the filter 44 to a digital signal, and a ~~determiner~~ bit rate deriving unit 46 for determining the bit rate from the output of the analog-to-digital converter 45.

7. Please amend the first two paragraphs on page 16, from line 1 thru line 8, as follows:

As described above, the bit-rate independent optical receiver of the present invention detects a bit rate from an optical signal received at the bit rate in recovering the input signal. Therefore, it can accommodate optical signals at different bit rates and recover data and a clock signal from an input optical signal, thereby increasing transmission quality and [[a]] transmission distance.

Furthermore, the optical receiver can operate adaptively with respect to a bit rate. Especially, when the optical receiver is applied to a wavelength division multiplexing transmission system together with other devices operated at different bit rates, there is no need for changing a channel card in the optical receiver even if wavelengths assigned to the devices or a system structure should be changed.